

**INTERNATIONAL SEARCH REPORT**

International application No.  
PCT/AU2005/000045

|   |   |                       |
|---|---|-----------------------|
| A. CLASSIFICATION OF SUBJECT MATTER   |   |                       |
| Int. Cl. ?: C07D 487/22, A61K 31/28, 31/282, 31/4188, A61P 35/00  |   |                       |
| According to International Patent Classification (IPC) or to both national classification and IPC   |   |                       |
| B. FIELDS SEARCHED  |   |                       |
| Minimum documentation searched (classification system followed by classification symbols)   |   |                       |
| Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched   |   |                       |
| Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)<br>STN: MEDLINE, CA, WPIDS, BIOSIS: keywords; Cucurbituril, metal, complex, palladium, gold, platinum  |   |                       |
| C. DOCUMENTS CONSIDERED TO BE RELEVANT  |   |                       |
| Category*   | Citation of document, with indication, where appropriate, of the relevant passages  | Relevant to claim No. |
| A   | WO 2003/024978 (POSTECH FOUNDATION) 27 March 2003<br>See whole document.  | 1-26                  |
| A   | Soo-Young Kim. et al. Angew. Chem. Int. Ed. 2001, 40, No 11, pages 2119-2121.<br>"Macromolecules: Cyclen, Cyclam, and their Transition Metal Complexes Encapsulated in Cucurbit[8]uril" See whole document .                | 1-26                  |
| A   | Dongmok Whang, et al. Agnew. Chem. Int Ed 1998, 37, No 1/2, pages 78-80.<br>"A Molecular Bowl with Metal Ion as Bottom: Reversible Inclusion of Organic Molecules in Cesium Ion Complexed Cucurbituril." See whole document | 1-26                  |
| <input type="checkbox"/> Further documents are listed in the continuation of Box C <input checked="" type="checkbox"/> See patent family annex  |   |                       |
| <p>* Special categories of cited documents:</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier application or patent but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> <p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone</p> <p>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art</p> <p>"&amp;" document member of the same patent family</p> |   |                       |
| Date of the actual completion of the international search<br>3 March 2005   | Date of mailing of the international search report<br>22 MAR 2005   |                       |
| Name and mailing address of the ISA/AU<br>AUSTRALIAN PATENT OFFICE<br>PO BOX 200, WODEN ACT 2606, AUSTRALIA<br>E-mail address: pct@ipaaustralia.gov.au<br>Facsimile No. (02) 6285 3929  | Authorized officer<br><b>K. LEVER</b><br>Telephone No : (02) 6283 2263  |                       |

**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International application No.

**PCT/AU2005/000045**

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

| Patent Document Cited in<br>Search Report   | Patent Family Member |               |               |  |  |
|---|----------------------|---------------|---------------|--|--|
| WO 03024978   | EP 1430061           | KR 2003024426 | US 2004265237 |  |  |
| Due to data integration issues this family listing may not include 10 digit Australian applications filed since May 2001. |                      |               |               |  |  |
| END OF ANNEX  |                      |               |               |  |  |

10/538302

**PATENT COOPERATION TREATY  
PCT**

**INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY**  
(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

|       |             |
|-------|-------------|
| REC'D | 28 DEC 2005 |
| WIPO  |             |
| PCT   |             |

|   |   |   |
|---|---|---|
| Applicant's or agent's file reference<br>SDS:BR:FP20979   | FOR FURTHER ACTION  | See Form PCT/IPEA/416                             |
| International application No.<br>PCT/AU2005/000045  | International filing date (day/month/year)<br>14 January 2005 | Priority date (day/month/year)<br>15 January 2004 |
| International Patent Classification (IPC) or national classification and IPC<br>Int. Cl.<br><br><i>C07D 487/22 (2006.01) A61K 31/282 (2006.01) A61P 35/00 (2006.01)</i><br><i>A61K 31/28 (2006.01) A61K 31/4188 (2006.01)</i> |   |   |
| Applicant<br>UNISEARCH LIMITED et al  |   |   |

|   |   |   |                     |                                     |          |                                      |  |                                     |                            |   |   |                                     |                         |                                      |  |                                       |   |
|---|---|---|---------------------|-------------------------------------|----------|--------------------------------------|--|-------------------------------------|----------------------------|---|---|-------------------------------------|-------------------------|--------------------------------------|--|---------------------------------------|---|
| <p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 3 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input type="checkbox"/> (<i>sent to the applicant and to the International Bureau</i>) a total of sheets, as follows:</p> <p><input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (<i>sent to the International Bureau only</i>) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or table related thereto, in electronic form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p> |   |   |                     |                                     |          |                                      |  |                                     |                            |   |   |                                     |                         |                                      |  |                                       |   |
| <p>4. This report contains indications relating to the following items:</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;"><input checked="" type="checkbox"/> Box No. I</td> <td>Basis of the report</td> </tr> <tr> <td><input type="checkbox"/> Box No. II</td> <td>Priority</td> </tr> <tr> <td><input type="checkbox"/> Box No. III</td> <td>Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</td> </tr> <tr> <td><input type="checkbox"/> Box No. IV</td> <td>Lack of unity of invention</td> </tr> <tr> <td><input checked="" type="checkbox"/> Box No. V</td> <td>Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</td> </tr> <tr> <td><input type="checkbox"/> Box No. VI</td> <td>Certain documents cited</td> </tr> <tr> <td><input type="checkbox"/> Box No. VII</td> <td>Certain defects in the international application</td> </tr> <tr> <td><input type="checkbox"/> Box No. VIII</td> <td>Certain observations on the international application</td> </tr> </table>  |   | <input checked="" type="checkbox"/> Box No. I | Basis of the report | <input type="checkbox"/> Box No. II | Priority | <input type="checkbox"/> Box No. III | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability | <input type="checkbox"/> Box No. IV | Lack of unity of invention | <input checked="" type="checkbox"/> Box No. V | Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement | <input type="checkbox"/> Box No. VI | Certain documents cited | <input type="checkbox"/> Box No. VII | Certain defects in the international application | <input type="checkbox"/> Box No. VIII | Certain observations on the international application |
| <input checked="" type="checkbox"/> Box No. I   | Basis of the report   |   |                     |                                     |          |                                      |  |                                     |                            |   |   |                                     |                         |                                      |  |                                       |   |
| <input type="checkbox"/> Box No. II   | Priority  |   |                     |                                     |          |                                      |  |                                     |                            |   |   |                                     |                         |                                      |  |                                       |   |
| <input type="checkbox"/> Box No. III  | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability  |   |                     |                                     |          |                                      |  |                                     |                            |   |   |                                     |                         |                                      |  |                                       |   |
| <input type="checkbox"/> Box No. IV   | Lack of unity of invention  |   |                     |                                     |          |                                      |  |                                     |                            |   |   |                                     |                         |                                      |  |                                       |   |
| <input checked="" type="checkbox"/> Box No. V   | Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement |   |                     |                                     |          |                                      |  |                                     |                            |   |   |                                     |                         |                                      |  |                                       |   |
| <input type="checkbox"/> Box No. VI   | Certain documents cited   |   |                     |                                     |          |                                      |  |                                     |                            |   |   |                                     |                         |                                      |  |                                       |   |
| <input type="checkbox"/> Box No. VII  | Certain defects in the international application  |   |                     |                                     |          |                                      |  |                                     |                            |   |   |                                     |                         |                                      |  |                                       |   |
| <input type="checkbox"/> Box No. VIII   | Certain observations on the international application   |   |                     |                                     |          |                                      |  |                                     |                            |   |   |                                     |                         |                                      |  |                                       |   |

|   |   |
|---|---|
| Date of submission of the demand<br>15 August 2005  | Date of completion of this report<br>13 December 2005                     |
| Name and mailing address of the IPEA/AU<br>AUSTRALIAN PATENT OFFICE<br>PO BOX 200, WODEN ACT 2606, AUSTRALIA<br>E-mail address: pct@ipaaustralia.gov.au<br>Facsimile No. (02) 6285 3929 | Authorized Officer<br><br><b>K. LEVER</b><br>Telephone No. (02) 6283 2263 |

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/AU2005/000045

## Box No. I Basis of the report

## 1. With regard to the language, this report is based on:

The international application in the language in which it was filed

A translation of the international application into , which is the language of a translation furnished for the purposes of:

- international search (under Rules 12.3(a) and 23.1 (b))
- publication of the international application (under Rule 12.4(a))
- international preliminary examination (Rules 55.2(a) and/or 55.3(a))

2. With regard to the elements of the international application, this report is based on (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*):

the international application as originally filed/furnished

the description:

|        |  |
|--------|--|
| pages  | as originally filed/furnished                    |
| pages* | received by this Authority on with the letter of |
| pages* | received by this Authority on with the letter of |

the claims:

|        |   |
|--------|---|
| pages  | as originally filed/furnished                             |
| pages* | as amended (together with any statement) under Article 19 |
| pages* | received by this Authority on with the letter of          |
| pages* | received by this Authority on with the letter of          |

the drawings:

|        |  |
|--------|--|
| pages  | as originally filed/furnished                    |
| pages* | received by this Authority on with the letter of |
| pages* | received by this Authority on with the letter of |

a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing.

3.  The amendments have resulted in the cancellation of:

- the description, pages
- the claims, Nos.
- the drawings, sheets/figs
- the sequence listing (*specify*):
- any table(s) related to the sequence listing (*specify*):

4.  This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- the description, pages
- the claims, Nos.
- the drawings, sheets/figs
- the sequence listing (*specify*):
- any table(s) related to the sequence listing (*specify*):

\* If item 4 applies, some or all of those sheets may be marked "superseded."

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.  
PCT/AU2005/000045

|                               |   |     |
|-------------------------------|---|-----|
| Box No. V                     | Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement |     |
| 1. Statement                  |   |     |
| Novelty (N)                   | Claims 1-26   | YES |
|                               | Claims  | NO  |
| Inventive step (IS)           | Claims 1-26   | YES |
|                               | Claims  | NO  |
| Industrial applicability (IA) | Claims 1-26   | YES |
|                               | Claims  | NO  |

## 2. Citations and explanations (Rule 70.7)

D1 WO 2003/024978

D2 Soo-Young Kim, et al. Angew. Chem. Int. Ed. 2001, 40, No 11, pages 2119-2121.

D3 Dongmok Whang, et al. Angew. Chem. Int Ed 1998, 37, No 1/2, pages 78-80.

## Explanations:

D1 represents the closest prior art and it discloses singular nuclear platinum complexes encased in a cucurbit[n]uril (CB[n]), where n is 4 to 20. These compounds are used as pharmaceuticals and in particular as anticancer agents. There is no suggestion of multinuclear metal complexes encapsulated in a CB nor is there any suggestion that to do so would reduce the toxicity of these complexes.

D2 discloses a CB[8] which encapsulates a singular nuclear copper complex. The citation does not exemplify a use only suggests that the compounds were rare in the prior art and that they would be potentially useful as catalysts.

D3 This document discloses a lidded or bottomed CB where the CB has one end blocked by a Cesium complex. The addition of the cesium lid improves the solubility in water and still allows a large enough space inside the CB for a guest ion or molecule. The only molecule exemplified as a guest is THF, however potential applications for the lidded CB mentioned include separations, catalysts, sensors, and drug delivery. No multi nuclear metal complexes are mentioned or implied.

It is considered that claims 1-26 are novel and possess an inventive step over the prior art. Claims 1-26 also have Industrial Applicability.

## PATENT COOPERATION TREATY

PCT

NOTIFICATION OF THE RECORDING  
OF A CHANGE(PCT Rule 92bis.1 and  
Administrative Instructions, Section 422)

| From the INTERNATIONAL BUREAU   |   |  |   |  |   |  |                                 |               |  |  |                 |  |  |
|---|---|--|---|--|---|--|---------------------------------|---------------|--|--|-----------------|--|--|
| Date of mailing (day/month/year)<br>14 June 2006 (14.06.2006)   | To:<br><br>GRIFFITH HACK<br>GPO Box 4164<br>Sydney, New South Wales 2001<br>Australia |  |   |  |   |  |                                 |               |  |  |                 |  |  |
| Applicant's or agent's file reference<br>fp20979  | <b>IMPORTANT NOTIFICATION</b>   |  |   |  |   |  |                                 |               |  |  |                 |  |  |
| International application No.<br>PCT/AU2005/000045  | International filing date (day/month/year)<br>14 January 2005 (14.01.2005)            |  |   |  |   |  |                                 |               |  |  |                 |  |  |
| <p>1. The following indications appeared on record concerning:</p> <p><input checked="" type="checkbox"/> the applicant   <input type="checkbox"/> the inventor   <input type="checkbox"/> the agent   <input type="checkbox"/> the common representative</p> <table border="1"> <tr> <td>Name and Address<br/>UNISEARCH LIMITED<br/>Rupert Myers Building<br/>Gate 14<br/>Barker Street<br/>UNSW<br/>Sydney, New South Wales 2052<br/>Australia</td> <td>State of Nationality<br/>AU</td> <td>State of Residence<br/>AU</td> </tr> <tr> <td colspan="3">Telephone No.</td> </tr> <tr> <td colspan="3">Facsimile No.</td> </tr> <tr> <td colspan="3">Teleprinter No.</td> </tr> </table>  |   | Name and Address<br>UNISEARCH LIMITED<br>Rupert Myers Building<br>Gate 14<br>Barker Street<br>UNSW<br>Sydney, New South Wales 2052<br>Australia                | State of Nationality<br>AU                                | State of Residence<br>AU                                       | Telephone No.   |  |                                 | Facsimile No. |  |  | Teleprinter No. |  |  |
| Name and Address<br>UNISEARCH LIMITED<br>Rupert Myers Building<br>Gate 14<br>Barker Street<br>UNSW<br>Sydney, New South Wales 2052<br>Australia   | State of Nationality<br>AU  | State of Residence<br>AU   |   |  |   |  |                                 |               |  |  |                 |  |  |
| Telephone No.   |   |  |   |  |   |  |                                 |               |  |  |                 |  |  |
| Facsimile No.   |   |  |   |  |   |  |                                 |               |  |  |                 |  |  |
| Teleprinter No.   |   |  |   |  |   |  |                                 |               |  |  |                 |  |  |
| <p>2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:</p> <p><input type="checkbox"/> the person   <input checked="" type="checkbox"/> the name   <input type="checkbox"/> the address   <input type="checkbox"/> the nationality   <input type="checkbox"/> the residence</p> <table border="1"> <tr> <td>Name and Address<br/>NEWSOUTH INNOVATIONS PTY LIMITED<br/>Rupert Myers Building<br/>Gate 14<br/>Barker Street<br/>UNSW<br/>Sydney, New South Wales 2052<br/>Australia</td> <td>State of Nationality<br/>AU</td> <td>State of Residence<br/>AU</td> </tr> <tr> <td colspan="3">Telephone No.</td> </tr> <tr> <td colspan="3">Facsimile No.</td> </tr> <tr> <td colspan="3">Teleprinter No.</td> </tr> </table> |   | Name and Address<br>NEWSOUTH INNOVATIONS PTY LIMITED<br>Rupert Myers Building<br>Gate 14<br>Barker Street<br>UNSW<br>Sydney, New South Wales 2052<br>Australia | State of Nationality<br>AU                                | State of Residence<br>AU                                       | Telephone No.   |  |                                 | Facsimile No. |  |  | Teleprinter No. |  |  |
| Name and Address<br>NEWSOUTH INNOVATIONS PTY LIMITED<br>Rupert Myers Building<br>Gate 14<br>Barker Street<br>UNSW<br>Sydney, New South Wales 2052<br>Australia  | State of Nationality<br>AU  | State of Residence<br>AU   |   |  |   |  |                                 |               |  |  |                 |  |  |
| Telephone No.   |   |  |   |  |   |  |                                 |               |  |  |                 |  |  |
| Facsimile No.   |   |  |   |  |   |  |                                 |               |  |  |                 |  |  |
| Teleprinter No.   |   |  |   |  |   |  |                                 |               |  |  |                 |  |  |
| <p>3. Further observations, if necessary:</p>   |   |  |   |  |   |  |                                 |               |  |  |                 |  |  |
| <p>4. A copy of this notification has been sent to:</p> <table> <tr> <td><input checked="" type="checkbox"/> the receiving Office</td> <td><input type="checkbox"/> the designated Offices concerned</td> </tr> <tr> <td><input type="checkbox"/> the International Searching Authority</td> <td><input checked="" type="checkbox"/> the elected Offices concerned</td> </tr> <tr> <td><input type="checkbox"/> the International Preliminary Examining Authority</td> <td><input type="checkbox"/> other:</td> </tr> </table>  |   | <input checked="" type="checkbox"/> the receiving Office   | <input type="checkbox"/> the designated Offices concerned | <input type="checkbox"/> the International Searching Authority | <input checked="" type="checkbox"/> the elected Offices concerned | <input type="checkbox"/> the International Preliminary Examining Authority | <input type="checkbox"/> other: |               |  |  |                 |  |  |
| <input checked="" type="checkbox"/> the receiving Office  | <input type="checkbox"/> the designated Offices concerned                             |  |   |  |   |  |                                 |               |  |  |                 |  |  |
| <input type="checkbox"/> the International Searching Authority  | <input checked="" type="checkbox"/> the elected Offices concerned                     |  |   |  |   |  |                                 |               |  |  |                 |  |  |
| <input type="checkbox"/> the International Preliminary Examining Authority  | <input type="checkbox"/> other:   |  |   |  |   |  |                                 |               |  |  |                 |  |  |
| The International Bureau of WIPO<br>34, chemin des Colombettes<br>1211 Geneva 20, Switzerland<br>Facsimile No. (41-22) 338.87.40  | Authorized officer<br>Véronique Bellour<br>Telephone No. (41-22) 338 8602             |  |   |  |   |  |                                 |               |  |  |                 |  |  |

## PATENT COOPERATION TREATY

PCT

NOTIFICATION OF THE RECORDING  
OF A CHANGE(PCT Rule 92bis.1 and  
Administrative Instructions, Section 422)

|  |  |   |  |
|--|--|---|--|
|  |  | From the INTERNATIONAL BUREAU   |  |
|  |  | To:   |  |
|  |  | <b>GRIFFITH HACK</b><br><b>GPO Box 4164</b><br><b>Sydney, New South Wales 2001</b><br><b>Australia</b>  |  |
| <b>Date of mailing (day/month/year)</b><br>14 June 2006 (14.06.06)   |  |   |  |
| <b>Applicant's or agent's file reference</b><br>fp20979  |  | <b>IMPORTANT NOTIFICATION</b>   |  |
| <b>International application No.</b><br>PCT/AU05/00045   |  | <b>International filing date (day/month/year)</b><br>14 January 2005 (14.01.05)   |  |
| 1. The following indications appeared on record concerning:<br><input checked="" type="checkbox"/> the applicant <input type="checkbox"/> the inventor <input type="checkbox"/> the agent <input type="checkbox"/> the common representative   |  |   |  |
| Name and Address<br>UNISEARCH LIMITED<br>Rupert Myers Building<br>Gate 14<br>Barker Street<br>UNSW<br>Sydney, New South Wales 2052<br>Australia  |  | State of Nationality  |  |
|  |  | AU  |  |
|  |  | State of Residence  |  |
|  |  | AU  |  |
|  |  | Telephone No.   |  |
|  |  | Facsimile No.   |  |
|  |  | Teleprinter No.   |  |
| 2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:<br><input type="checkbox"/> the person <input checked="" type="checkbox"/> the name <input type="checkbox"/> the address <input type="checkbox"/> the nationality <input type="checkbox"/> the residence |  |   |  |
| Name and Address<br>NEWSOUTH INNOVATIONS PTY LIMITED<br>Rupert Myers Building<br>Gate 14<br>Barker Street<br>UNSW<br>Sydney, New South Wales 2052<br>Australia   |  | State of Nationality  |  |
|  |  | AU  |  |
|  |  | State of Residence  |  |
|  |  | AU  |  |
|  |  | Telephone No.   |  |
|  |  | Facsimile No.   |  |
|  |  | Teleprinter No.   |  |
| 3. Further observations, if necessary:   |  |   |  |
| 4. A copy of this notification has been sent to:   |  |   |  |
| <input checked="" type="checkbox"/> the receiving Office<br><input type="checkbox"/> the International Searching Authority<br><input type="checkbox"/> the International Preliminary Examining Authority   |  | <input type="checkbox"/> the designated Offices concerned<br><input checked="" type="checkbox"/> the elected Offices concerned<br><input type="checkbox"/> other: |  |
| The International Bureau of WIPO<br>34, chemin des Colombettes<br>1211 Geneva 20, Switzerland<br><br>Facsimile No. (41-22) 338.87.40   |  | Authorized officer<br><br><b>Véronique Bellour</b><br><br>Telephone No. (41-22) 338 8602  |  |